

The seal of the State of South Dakota is a circular emblem. It features a central landscape with a river, a bridge, and mountains. Above the landscape is a banner that reads "UNDER GOD THE PEOPLE RULE". The outer ring of the seal contains the text "STATE OF SOUTH DAKOTA" at the top and "GREAT SEAL" at the bottom, separated by two stars. The year "1889" is inscribed at the bottom of the seal.

STATEMENT OF BASIS

Multi-Media Permit

T & R Service Company

Colman, South Dakota

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1.0 BACKGROUND

T & R Service Company was issued a multi-media environmental permit on March 17, 2005. The multi-media environmental permit consists of a minor air quality permit that contains waste management requirements. The multi-media environmental permit contains federally enforceable operational limits that maintain air emissions below the major source threshold under the Title V air quality permit program.

On August 9, 2007, T & R Service Company submitted an application for a modification to its existing air quality permit. The application was for a sanding booth, which was installed in 2006 but had not been operated. The South Dakota Department of Environment and Natural Resources (DENR) determined the sanding booth was an insignificant activity and did not include it in the permit.

On December 15, 2009, T & R Service Company submitted an application to renew its permit which expires on March 17, 2010. The application was considered complete on March 5, 2010. In accordance with permit condition 3.2, as referenced to ARSD 74:36:04:06, the current permit shall not expire and shall remain in effect until the Secretary takes final action on a timely permit renewal application. A timely renewal application is one that is submitted at least 90 days before the date of expiration. Although T & R Service Company's application was not submitted within 90 days, DENR is considering it timely and T & R Service Company may operate until the Secretary takes final action on their renewal application.

There have been no complaints or violations filed against this facility since the last permit review.

2.0 OPERATIONAL DESCRIPTION

T & R Service Company recovers recyclable metals by processing electrical equipment that contained transformer oil with less than 500 parts per million (ppm) polychlorinated biphenyl's, hereinafter "PCBs". The transformer oil is sampled and tested for the level of PCBs to ensure that the concentration is less than 500 ppm. The electrical equipment is drained, disassembled and degreased. The facility recovers recyclable metals by processing drained electrical equipment in a wire reclamation furnace. Electrical equipment includes, but is not limited to, transformers, regulators, and oil switches but does not include cable or wire that is not a component of the electrical equipment. A spray booth is used to paint rebuilt transformers using an airless electrostatic method.

T & R Service Company's operation is classified under the Standard Industrial Code – 3612-Power, Distribution, and Specialty Transformers (NIACS Code 335311). This classification includes establishments primarily engaged in manufacturing power, distribution, instrument, and specialty transformers.

Table 2-1 provides a description of the permitted units, which was derived from the existing permit.

Table 2-1 – Description of Permitted Units, Operations and Processes

Identification	Description	Maximum Operating Rate	Control Device
Unit #1	1990 Al-Jon United W-3000-HT multi chambered wire reclamation furnace. The unit is used to burn the combustible material from drained electrical equipment that contained transformer oil with less than 500 parts per million polychlorinated biphenyls (PCBs).	10,000 pounds per batch. Each batch takes approximately three hours to complete	The wire reclamation furnace is equipped with an afterburner fired with transformer oil containing PCBs less than two parts per million and distillate oil.
Unit #2	1989 Dayton Paint Booth (model #3C412) paint booth. The unit is used to paint rebuilt transformers using an airless electrostatic spraying method.	Not applicable	The paint booth is equipped with 20, 20"x20"x2" polyester fiber filter pads.

Both the primary chamber and the afterburner of the 1990 Al-Jon United 3000 wire reclamation furnace are fired with mineral oil containing less than two ppm PCBs. Prior to the primary chamber being charged with a load, the afterburner is brought up to temperature. The permit requires that a minimum afterburner temperature of 1,800 degrees Fahrenheit be maintained. T & R Service Company operates the afterburner at a minimum operating temperature of 1,800 degrees Fahrenheit.

Permit condition 6.7 of the multi-media permit requires that used oil burned in the wire reclamation furnace must be tested by the owner or operator to determine whether the oil contains less than two ppm PCBs and meets the used oil specifications found in ARSD 74:28:27:01.

3.0 POTENTIAL EMISSIONS

3.1 Emission Factors

DENR uses stack test results to determine air emissions whenever stack test data is available from the source or a similar source. When stack test results are not available, DENR relies on manufacturing data, material balance, EPA's Compilation of Air Pollutant Emission Factors (AP-42, Fifth Edition, Volume 1) document, the applicant's application, or other methods to determine potential air emissions.

T & R Service Company submitted a stack test that was performed in 1989 in Goldsboro, North Carolina, on a 5,000 pound per batch wire reclamation furnace. The stack test determined emission rates for particulate, hydrogen chloride and dioxins/furans.

There is little information available on the type and amount of air emissions from wire reclamation furnaces. The sulfur dioxide (SO₂), nitrogen oxide (NO_x), and carbon monoxide (CO) emissions will be based on fuel oil combustion in a boiler. The emission factors for boilers using distillate oil are derived from AP-42 – Fifth Edition, Tables 1.3-1, 9/98. Boilers are classified according to their heat input. A small boiler is one that has a heat input less than 100 million Btus per hour. The wire reclamation unit has a heat input value of 6.0 million Btus per hour. Therefore, the wire reclamation unit is similar to a small boiler. The sulfur content of transformer oil ranges from 0.2 to 1.0 percent. A sulfur content of 1.0 percent will be assumed to represent the highest potential emission rate.

The sulfur dioxide, nitrogen oxide, carbon monoxide, volatile organic compounds (VOCs) and hazardous air pollutants (HAPs) emissions will be based on fuel oil combustion in a boiler. The emission factors for boilers using distillate oil shown in Table 3-1 are derived from AP-42 – Fifth Edition, Tables 1.3-1, 9/98.

Table 3-1 – Wire Reclamation Furnace Emission Factors

Pollutant	Emission Factor
TSP/PM10 ¹	0.16 pounds per hour
SO₂ ²	142 pounds per 1,000 gallons
NO_x	20 pounds per 1,000 gallons
CO	5 pounds per 1,000 gallons
VOCs	0.34 pounds per 1,000 gallons
HAPs	0.04 pounds per 1,000 gallons

¹ – From 1989 stack test submitted previously by T & R Service Company; and

² – “S” indicates that the weight percent of sulfur in the oil. The sulfur content of distillate oil was assumed to be 1.0% weight percent sulfur, which equates to an emission rate of 142 pounds per 1,000 gallons.

3.2 Potential Emission Estimates

Potential emissions are based on operating at full capacity, 24 hours per day, 7 days per week unless there are enforceable permit conditions that restrict the operations below the maximum capacity of the unit or hours of operation.

T & R Service Company’s application states that the two ppm PCB mineral oil would be used to fuel the afterburner and achieve an operating temperature of 1,800 degrees Fahrenheit. Then, the combustible material is placed into the primary chamber. The primary chamber is also required to be fired with less than two ppm PCB oil. These requirements will be included in the multi-media permit. Therefore, the use of the afterburner will be considered as control equipment.

The performance standard for new wire reclamation furnaces was adopted by the state in April 1993 to minimize dioxin and furan emissions (Administrative Rule of South Dakota 74:36:07:29 – Operating requirements for wire reclamation furnaces). The state requires new wire reclamation furnaces to maintain a minimum temperature of 2,200 degrees Fahrenheit and a residence time at that temperature of two-seconds in the last chamber. The temperature and residence time limits were derived from federal requirements for the destruction of PCBs in 40

CFR § 761.70(a)(1)(i). The federal temperature limit and residence time were designed to destroy greater than or equal to 99.99 percent of the principle organic hazardous constituent. A control efficiency of 99.99% will be applied to the afterburner.

DENR reviewed state and federal requirements for units that burn combustible material that may generate dioxin/furan emissions. The state's medical waste regulations require a new unit to maintain 1,800 degrees Fahrenheit at one to two second retention time, depending on the size of the unit. Other federal documents indicate that dioxins/furans are minimized at this temperature and residence time. Based on this information, wire reclamation furnaces that are not considered new will be required to operate with a minimum secondary temperature at or above 1,800 degrees Fahrenheit and a two second retention time.

3.2.1 Potential Particulate Emissions – Wire Reclamation Furnace

The burners for the wire reclamation furnace are rated at 6.0 million Btus per hour heat input. The potential amount of transformer oil that could be fired in the wire reclamation furnace is calculated using Equation 3-1.

Equation 3-1 – Potential oil consumption

$$\begin{aligned}\text{Maximum fuel consumption} &= (\text{maximum rate} \div \text{fuel heat input} \times 8,760 \text{ hours/year}) \\ &= 6,000,000 \text{ Btus/hr} \div 140,000 \text{ Btus/gallon} \times 8,760 \text{ hrs/yr} \\ &= 375,430 \text{ gallons/year}\end{aligned}$$

The particulate emission rate is based on a stack test that was performed on a 5,000 pound per batch wire reclamation furnace. The average particulate emission rate for the three runs in this test was 0.078 pounds per hour. T & R Service Company operates a 10,000 pound per batch unit which is double the size of the unit that was tested. Therefore, the emission rate will be doubled (0.16 pounds per hour) for evaluating T & R Service Company's operation. Equation 3-2 is used to calculate the potential uncontrolled particulate emissions (E_{TSP}):

Equation 3-2 – Uncontrolled particulate emissions

$$\begin{aligned}E_{TSP} &= (0.16 \text{ lbs/hr} \times 8,760 \text{ hrs/year}) / 2,000 \text{ lbs/ton} \\ &= 0.70 \text{ tons per year}\end{aligned}$$

The potential emissions for the remaining air pollutants will be calculated using Equation 3.3.

Equation 3-3 – Potential emissions from remaining air pollutants

$$E = \text{Maximum fuel consumption (gals/yr)} \times \text{Emission Factor (lbs/1,000 gals)} / 2,000 \text{ lbs/ton}$$

The potential emissions from the wire reclamation furnace are shown in Table 3-2.

Table 3-2 – Potential Emissions from Wire Reclamation Furnace (tons/year)

Pollutant	TSP/PM10	SO₂	NO_x	CO	VOCs	HAPs
Potential Emissions	0.70	26.7	3.8	1.0	0.0	0.0

3.2.2 Potential Hydrogen Chloride Emissions – Wire Reclamation Furnace

A stack test submitted by T & R Service Company was performed on a wire reclamation furnace unit capable of processing 5,000 pounds of material per batch. The stack test was performed while burning wire only (13% combustibles) and wire with transformer cores (20% combustibles). One of the test pollutants was chloride (Cl) to determine hydrogen chloride emissions.

T & R Service Company will only process electrical equipment; therefore, hydrogen chloride emission rates for the wire/transformer test will be used in this review. The batch load during the test averaged 2,073 pounds, or 34.6 pounds per hour of combustible material. The temperature in the last chamber ranged from 1,805 to 2,000 degrees Fahrenheit. The calculations to convert the chloride emission rate to hydrogen chloride (HCl) were derived from 40 CFR Part 60, Appendix A, Method 26. The potential hydrogen chloride air emissions (E_{HCl}) are calculated using Equation 3-4.

Equation 3-4 – Potential hydrogen chloride emissions

$$\begin{aligned} E_{HCl} &= 0.391 \text{ kg/hr Cl} \times 10^9 \mu\text{g/kg} \times 1.028 \mu\text{g HCl}/\mu\text{g-mole} \times \mu\text{g-mole}/\mu\text{g-Cl} \times 2.205 \times 10^{-9} \text{ lbs}/\mu\text{g} \\ &= 0.89 \text{ lbs/hr} \end{aligned}$$

T & R Service Company operates a 10,000 pound per batch unit which is double the size of the unit that was tested. Therefore, the emission rate will be doubled (1.78 pounds per hour) for evaluating T & R Service Company's operation. This assumption should be correct since hydrogen chloride emissions are related to the amount of chlorine in the material being combusted. The emission factor is the uncontrolled emission rate based on the furnace not being equipped to control hydrogen chloride emissions. Equation 3-5 is used to calculate the potential hydrogen chloride emissions from T & R Service Company.

Equation 3-5 – Potential hydrogen chloride emissions from wire reclamation furnace

$$\begin{aligned} E_{HCl} &= 0.89 \text{ pounds per hour} \times 2 \times 8,760 \text{ hours/year} / 2,000 \text{ pounds/ton} \\ &= 7.80 \text{ tons/year} \end{aligned}$$

HCL emissions are also generated from the burning of PCBs in the mineral oil used to fuel the furnace. The HCl emission rate from the PCBs depends on the concentration of PCBs in the mineral oil. T & R Service Company is proposing to combust mineral oil containing up to **two parts per million** by volume PCBs. Equation 3-6 calculates the potential hydrogen chloride emissions from burning PCB oil. The density of PCB oil is 13.1 pounds per gallon.

Equation 3-6 – Potential hydrogen chloride emissions from PCB oil

$$\begin{aligned} E_{HCl} &= 0.000002 \times 375,430 \text{ gallons/year} \times 13.1 \text{ lbs/gallon} / 2,000 \text{ pounds/ton} \\ &= 0.005 \text{ tons/year} \end{aligned}$$

Assuming that all of the PCBs are converted to HCl in the combustion process the molecule ratio of 1.03 molecules of chlorine to 1.0 molecule of PCB, the hydrogen chloride emissions from burning PCB oil is **0.005** tons per year.

The combined hydrogen chloride annual emission rate is **7.8** tons per year.

3.2.3 Potential Dioxins and Furans Emissions – Wire Reclamation Furnace

A stack performance test conducted in July 1989 was performed in Goldsboro, North Carolina on a wire reclamation furnace rated at 5,000 pounds per batch. The average load while testing for dioxin (CDD) and furan (CDF) averaged 4,010 pounds per batch with 10% of the material being combustible or 133.7 pounds of combustibles per hour. The potential emissions of dioxins and furans ($E_{CDD \text{ and } CDF}$) are calculated using Equation 3-7.

Equation 3-7 – Dioxin and furan emission rates

$$\begin{aligned} E_{CDD \text{ and } CDF} &= 9.59 \text{ micrograms } (\mu\text{g}) \text{ per hour} \times 2.205 \times 10^{-9} \text{ pounds per } \mu\text{g} \\ &= 2.11 \times 10^{-8} \text{ pounds per hour} \end{aligned}$$

T & R Service Company operates a 10,000 pound per batch unit which is double the size of the unit that was tested. Therefore, the emission rate will be doubled for evaluating T & R Service Company's operation. The revised CDD and CDF emission rate will be 4.22×10^{-8} pounds per hour. Using this emission factor and Equation 3-2, the potential emissions of dioxins and furans from the processing of material in the wire reclamation furnace is 1.85×10^{-7} tons/year

The dioxin and furan emission rate also depends on the concentration of PCBs in the mineral oil used to fuel the furnace. T & R Service Company combusts mineral oil containing up to 2 ppm PCBs. Using Equation 3-6 and assuming all of the PCBs are converted to dioxins and furans and the molecule ratio for PCBs is 1.14 molecules of dioxin to one molecule of PCB, the dioxin and furan emissions from burning PCB oil is 0.006 tons per year.

The combined dioxin and furan annual emission rate is 0.006 tons per year.

3.2.4 Potential Lead Emissions – Wire Reclamation Furnace

T & R Service Company conducted a stack test to determine lead emissions in April 1999. The lead emission rate during the stack test was determined to be 0.006 pounds per hour while processing 3,575 pounds per batch. The following equation calculates the lead emission rate per pound of combustibles:

Equation 3-8 – Pounds per hour lead emission rate

$$\begin{aligned} E_{Pb} &= 0.006 \text{ lbs/hr} / (3,575 \text{ lbs/batch} / 3 \text{ hours/batch} \times 5\%) \\ &= 0.0001 \text{ lbs/lb} \end{aligned}$$

Equation 3-9 calculates the potential annual lead emissions ($E_{Pb \text{ tons per year}}$), based on 10,000 pounds per batch, each batch taking 3 hours to process and 5% of the material consisting of combustibles (167 pounds per hour).

Equation 3-9 – Potential lead emissions

$$\begin{aligned} E_{Pb} &= (0.0001 \text{ lbs/lb} \times 167 \text{ lbs/hr} \times 8,760 \text{ hrs/yr}) / 2,000 \text{ lbs/ton} \\ &= 0.07 \text{ tons/year} \end{aligned}$$

3.2.5 Potential Emissions – Spray Booth

The emission factors for the spray booth were derived from the material safety data sheets for the products used in the spray booth. The potential emission rate is estimated from the amount of paint and solvent used in the spray booth and the amount of time the booth is operated. T & R Service Company identified in the permit application that the 1989 spray booth operates 4 hours per day for 50 days per year (200 hours per year).

Potential emissions are calculated assuming that the facility operates 24 hours per day 365 days per year (8,760 hours per year). Therefore, the potential emissions for the spray booth will be calculated by multiplying the actual emissions by the ratio in Equation 3-10 and is summarized in Table 3-3. The actual calculations are displayed in Appendix A.

Equation 3-10 – Spray Booth Multiplying Factor

$$\frac{8,760 \text{ potential operating hours/ year}}{200 \text{ actual operating hours/ year}} = 43.8$$

Uncontrolled potential emissions are those that would occur with no emission controls. Dry filter media are used to control particulate matter; however, the filters do not control volatile organic compound or hazardous air pollutant emissions. Therefore, the potential uncontrolled emissions are equal to the potential controlled and will be referred to as potential emissions.

Table 3-3 – Spray Booth Potential Emissions

Pollutant	Actual Emissions	Potential Emissions
Volatile Organic Compounds	0.3 tons per year	11.3 tons per year
Total Hazardous Air Pollutants	0.2 tons per year	7.9 tons per year

3.2.6 Summary of Potential Emissions

Table 3-4 summarizes the potential emissions from the permitted units.

Table 3-4 – Potential Emissions Summary

Unit	TSP/PM10	SO2	NOx	CO	VOCs	HAPs	
						Single	Total
#1	0.7	26.7	3.8	1.0	0.1	7.8 ¹	7.9
#2	0.0	0.0	0.0	0.0	11.3	7.3 ²	7.8
Total	1	27	4	1	11	8 ³	16

¹ – The single greatest HAP emissions from Unit #1 is hydrogen chloride;

² – The single greatest HAP emissions from Unit #2 is xylene; and

³ – The single greatest HAP emissions from all units is hydrogen chloride.

4.0 PERMIT REQUIREMENTS

4.1 New Source Review

ARSD 74:36:10:01 notes that new source review regulations apply to areas of the state which are designated as nonattainment pursuant to the Clean Air Act for any pollutant regulated under the Clean Air Act. T & R Service Company operates in Colman, South Dakota, which is in attainment for all the pollutants regulated under the Clean Air Act. Therefore, T & R Service Company is not subject to new source review.

4.2 Prevention of Significant Deterioration

A prevention of significant deterioration (PSD) review applies to new major stationary sources and major modifications to existing major stationary sources in areas designated as attainment under Section 107 of the Clean Air Act for any regulated pollutant. T & R Service Company is located in Colman, South Dakota and is in attainment for all regulated pollutants. The following is a list of regulated pollutants under the PSD program:

- Total suspended particulate (PM);
- Particulate with a diameter less than or equal to 10 microns (PM10);
- Sulfur dioxide (SO₂);
- Nitrogen oxides (NO_x);
- Carbon monoxide (CO);
- Ozone – measured as volatile organic compounds (VOCs);
- Lead;
- Fluorides;
- Sulfuric acid mist;
- Hydrogen sulfide;
- Reduced sulfur compounds; and
- Total reduced sulfur.

If the source is considered one of the 28 named PSD source categories listed in Section 169 of the federal Clean Air Act, the major source threshold is 100 tons per year of any regulated pollutant. The major source threshold for all other sources is 250 tons per year of any regulated pollutant.

T & R Service Company is not considered one of the 28 named PSD source categories; therefore, the major source threshold is 250 tons per year. T & R Service Company's potential emissions are less than 250 tons per year; therefore, T & R Service Company is considered a minor source under this program and not subject to a Prevention of Significant Deterioration review.

4.3 New Source Performance Standards

DENR reviewed the New Source Performance Standards under 40 CFR Part 60 and determined that the following need to be reviewed further to determine if they are applicable.

4.3.1 ARSD 74:36:07:12 – 40 CFR, Part 60, Subpart K

DENR determined that 40 CFR Part 60, Subpart K may be applicable. Subpart K – Standards of Performance for storage vessels of petroleum liquids constructed after June 11, 1973, and before May 19, 1978, is applicable to owners and operators of volatile organic liquid storage vessels that:

- Construction, reconstruction, or modification commenced after June 11, 1973 and before May 19, 1978; and
- The tank has a capacity greater than or equal to 151,412 liters (40,000 gallons) that is used to store volatile organic liquids.

T & R Service Company has two aboveground storage tanks. One is used for storing diesel fuel, was constructed in 1997 and has a storage capacity of 7,000 gallons. The second tank is used for the storage of transformer oil containing less than two ppm and was constructed in 1986 and has a storage capacity of 7,000 gallons. The storage capacity of the two aboveground storage tanks is each less than 151,412 liters (40,000 gallons). Therefore, this subpart is not applicable to the storage tanks.

4.3.2 ARSD 74:36:07:13 – 40 CFR, Part 60, Subpart Ka

DENR determined that 40 CFR Part 60, Subpart Ka may be applicable. Subpart Ka – Standards of Performance for storage vessels of petroleum liquids constructed after May 18, 1978 and before July 24, 1984, is applicable to owners and operators of volatile liquid storage vessels that:

- Construction, reconstruction, or modification commenced after May 18, 1978 and before July 24, 1984; and
- The tank has a capacity greater than or equal to 151,416 liters (40,000 gallons) that is used to store volatile organic liquids.

The storage capacity of the two aboveground storage tanks is each less than 151,412 liters (40,000 gallons). Therefore, this subpart is not applicable to the storage tanks.

4.3.3 ARSD 74:36:07:14 – 40 CFR, Part 60, Subpart Kb

DENR determined that 40 CFR Part 60, Subpart Kb may be applicable.

Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction, or Modification Commenced after July 23, 1984, is applicable to owners and operators of volatile liquid storage vessels that:

- Has a capacity greater than or equal to 75 cubic meters and used to store volatile organic liquids; and
- Commenced construction, reconstruction, or modification after July 23, 1984.

The storage capacity of the two aboveground storage tanks is each less than 75 cubic meters (19,800 gallons). Therefore, this subpart is not applicable to the storage tanks.

4.4 National Emission Standards for Hazardous Air Pollutants (MACT – Part 61)

Presently, there are no finalized or promulgated National Emissions Standards for Hazardous Air Pollutants standards applicable to this type of operation.

4.5 Maximum Achievable Control Technology Standards (40 CFR Part 63)

DENR reviewed the Maximum Achievable Control Technology (MACT) standards under 40 CFR Part 63 and determined that the following need to be reviewed further to determine if they are applicable.

4.5.1 ARSD 74:36:08:37 – 40 CFR, Part 63, Subpart M

DENR reviewed the national emission standards and determined T & R Service Company may be applicable to 40 CFR Part 63, Subpart M. Subpart M is subject to owners or operators of miscellaneous metal parts and product surface coating facilities. Miscellaneous metal parts and products include, but are not limited to, metal components of the following types of products as well as the products themselves: motor vehicle parts and accessories, bicycles and sporting goods, recreational vehicles, extruded aluminum structural components, railroad cars, heavy duty trucks, medical equipment, lawn and garden equipment, electronic equipment, magnet wire, steel drums, industrial machinery, metal pipes, and numerous other industrial, household, and consumer products.

Surface coating is the application of coating to a substrate using, for example, spray guns or dip tanks. When application of coating to a substrate occurs, then surface coating also includes associated activities, such as surface preparation, cleaning, mixing, and storage. However, these activities do not comprise surface coating if they are not directly related to the application of the coating. Coating application with handheld, non-refillable aerosol containers, touch-up markers, marking pens, or the application of paper film or plastic film which may be pre-coated with an adhesive by the manufacturer are not coating operations for the purposes of this subpart.

A facility is subject to this subpart if it uses 946 liters (250 gallons (gal)) per year, or more, of coatings that contain hazardous air pollutants (HAP) in the surface coating of miscellaneous metal parts and products defined in paragraph (a) of this section; and that is a major source, is located at a major source, or is part of a major source of emissions of HAP. A major source of HAP emissions is any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit any single HAP at a rate of 9.07 megagrams (Mg) (10 tons) or more per year or any combination of HAP at a rate of 22.68 Mg (25 tons) or more per year.

T & R Service Company does not use more than 250 gallons per year of a coating that contains HAPs. Also, T & R Service Company has accepted enforceable emission limitations which maintain its potential HAP emissions to less than 10 tons per year of a single HAP and less than

25 tons per year of any combination of HAPs and does not meet the definition of a major source. Therefore, this subpart is not applicable to T & R Service Company.

4.5.2 40 CFR, Part 63, Subpart HHHHHH

DENR reviewed the national emission standards and determined T & R Service Company may be applicable to 40 CFR Part 63, Subpart HHHHHH. Subpart HHHHHH is applicable to owners or operators of paint stripping operations, auto body refinishing operations and the spray application of coatings containing compounds of chromium (Cr), lead (Pb), manganese (Mn), nickel (Ni), or cadmium (Cd), to any part or product made of metal or plastic, or combinations of metal and plastic that are not motor vehicles or mobile equipment.

An area source of HAP is a source of HAP that is not a major source of HAP, is not located at a major source, and is not part of a major source of HAP emissions. A major source of HAP emissions is any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit any single HAP at a rate of 10 tons or more per year, or emit any combination of HAP at a rate of 25 tons or more per year.

This subpart applies to sources using spray booths, ventilated prep stations, curing ovens, and associated equipment; spray guns and associated equipment, spray gun cleaning equipment. This subpart defines spray-applied coating operations as coatings that are applied using a hand-held device that creates an atomized mist of coating and deposits the coating on a substrate. For the purposes of this subpart, spray-applied coatings do not include the following materials or activities:

- (1) Coatings applied from a hand-held device with a paint cup capacity that is equal to or less than 3.0 fluid ounces (89 cubic centimeters); and
- (2) Surface coating application using powder coating, hand-held, non-refillable aerosol containers, or non-atomizing application technology, including, but not limited to, paint brushes, rollers, hand wiping, flow coating, dip coating, electro-deposition coating, web coating, coil coating, touch-up markers, or marking pens.

The Material Safety Data Sheets submitted by T & R Service Company did not indicate the use of any coatings containing compounds of chromium (Cr) lead (Pb), manganese (Mn), nickel (Ni), or cadmium (Cd). Therefore, this subpart is not applicable to T & R Service Company.

4.5.3 40 CFR Part 63, Subpart XXXXXX

The MACT standard for the control of HAPs for nine metal fabrication and finishing area source categories was finalized on July 23, 2008. An area source has the potential to emit less than 10 tons per year of a single HAP or 25 tons per year of a combination of HAPs. The provisions of this subpart are applicable to an area source that is primarily engaged in the operations in one of the following nine source categories:

- (1) Electrical and Electronic Equipment Finishing Operations (NAICS codes 335999 and 335312);

- (2) Fabricated Metal Products (NAICS codes 332117 and 332999);
- (3) Fabricated Plate Work (Boiler Shops) (NAICS codes 332313, 332410, and 332420);
- (4) Fabricated Structural Metal Manufacturing (NAICS code 332312);
- (5) Heating Equipment, except Electric ((NAICS code 333414);
- (6) Industrial Machinery and Equipment Finishing Operations (NAICS codes 333120, 333132 and 333911);
- (7) Iron and Steel Forging (NAICS code 33211);
- (8) Primary Metal products Manufacturing (NAICS code 332618); and
- (9) Valves and Pipe Fittings (NAICS code 332919).

The provisions of this subpart are applicable to new and existing sources primarily engaged in one of the nine operations listed above that use materials that contain or have the potential to emit metal fabrication or finishing metal HAP (MFHAP). T & R Service Company has a Standard Industrial Classification Code of 3612 and a North American Industry Classification System code of 335311. T & R Service Company is not one of the nine operations applicable to this subpart. Therefore, T & R Service Company is not applicable to this subpart.

4.6 State Requirements

ARSD 74:36:07:29, operating standards for new wire reclamation furnaces, was adopted in April, 1993 to minimize dioxin and furan emissions. The state requires new wire reclamation furnaces to maintain a minimum temperature of 2,200 degrees Fahrenheit and a residence time at that temperature of two-seconds in the last chamber. The temperature and residence time limits were derived from federal requirements for the destruction of PCBs, § 761.70(a)(1)(i). The federal temperature limit and residence time were designed to destroy greater than or equal to 99.99 percent of the principle organic hazardous constituent.

Although T & R Service Company is not considered a new source, they agreed to operate at the afterburner at a minimum temperature of 2,200 degrees Fahrenheit and a residence time of two-seconds.

DENR reviewed all the wire reclamation furnaces to determine whether or not it was correct to consider the wire reclamation furnaces as incinerators or if they should be considered a process. In accordance with ARSD 74:36:01:01(37), an incinerator is a furnace used to burn solid waste to reduce the volume of the waste by removing its combustible material. The companies use the wire reclamation furnaces to remove the combustible material to recover metals, not to reduce the volume of solid waste. Therefore, DENR concluded that a wire reclamation furnace is a process, not an incinerator.

4.6.1 Particulate (ARSD 74:36:06:03(1)(a))

The state particulate limit (E) for processing units is based on the process rate. The process rate for the furnace is 167 pounds per hour. Equation 4-1 calculates the particulate matter emission limit for the wire reclamation furnace.

Equation 4-1 – Particulate matter emission limit for wire reclamation furnace

$$\begin{aligned} E_{TSP} &= (4.10 \times P^{0.67}) \text{ lbs/hr} && \text{where } P \text{ is the process rate in tons per hour} \\ &= (4.10 \times (167 \text{ lbs/hr} \div 2,000 \text{ lbs/ton})^{0.67}) \text{ lbs/hr} \\ &= 0.8 \text{ lbs/hr} \end{aligned}$$

4.6.2 Sulfur Dioxide (ARSD 74:36:06:03(2))

The state sulfur dioxide limit (E) for processes that use a fuel burning unit is 3 pounds per million Btus. The heat input rate for the furnace is 2.6 MMBtus/hr. Equation 4-2 is used to convert the emission limit to pounds per hour:

Equation 4-2-Sulfur dioxide emission limit for wire reclamation furnaces

$$\begin{aligned} E_{SO_2} &= 3 \text{ lbs/MMBtu} \times H \text{ MMBtus/hr} && \text{where } H \text{ equals the heat input} \\ &= 3 \text{ lbs/MMBtu} \times 6.0 \text{ MMBtus/hr} \\ &= 18.0 \text{ lbs/hr} \end{aligned}$$

4.7 Summary of Emission Rates and Limits

Table 4-1 displays a comparison between the emission rate and emission limits.

Table 4-1 – Emission Rate and Limit Comparison

Pollutant	Emission Rate	Emission Limit
Particulate	0.2 pounds/hour	0.8 pounds/hour
Sulfur Dioxide	5.3 pounds/hour	18.0 pounds/hour

Based upon the comparison, the wire reclamation furnace is capable of meeting the state's particulate and sulfur dioxide emission limits.

4.8 Minor Air Quality Permit

T & R Service Company's potential emissions of hazardous air pollutants are less than 10 tons per year for a single hazardous air pollutant and below 25 ton per year for a combination of hazardous air pollutants. The potential emissions of criteria pollutants are less than 100 tons per year but greater than 25 tons per year. Therefore, T & R Service Company is eligible for a minor air quality operating permit.

Although the potential emissions of hazardous air pollutants are less than the major source threshold, T & R Service Company requested operational restrictions which maintain actual emissions of hazardous air pollutants below the major source threshold. This will allow T & R Service Company to use different paints with higher hazardous air pollutants but still maintain the emissions below the major source threshold.

4.9 Summary of Applicable Requirements

T & R Service Company will be required to operate within the requirements stipulated in the following regulations under the minor permit program:

- ARSD 74:36:04 – Operating Permits for Minor Sources;
- ARSD 74:36:06 – Regulated Air Pollutant Emissions;
- ARSD 74:36:11 – Performance Testing;
- ARSD 74:36:12 – Control of Visible Emissions; and
- ARSD 74:36:13 – Continuous Emission Monitoring Systems.

5.0 RECOMMENDATION

Based on the information submitted in the air quality permit renewal application DENR recommends approval of the multi-media permit containing enforceable conditions which maintain air emissions below the major source threshold under the Title V air quality program. The enforceable permit conditions allow T & R Service Company to be eligible for a permit under the minor air quality permit program. Questions regarding this permit review should be directed to Keith Gestring, Natural Resources Engineer.

Appendix A

POTENTIAL UNCONTROLLED EMISSION CALCULATIONS

Potential emissions from the paint booth will be based on the following equation:

Mass (lbs/gal) x weight percent (%) x usage (gals/yr) x (8,760 ÷ actual) (hrs/yr) ÷ 2,000 (lbs/ton)